

LMC214A-SCP
LMC214A-STP
LMC214AE-SCP
LMC214AE-STP

LMC213A-MMSC
LMC213A-MMST
LMC213A-SMSC
LMC213A-SMST
LMC213AE-MMSC
LMC213AE-MMST
LMC213AE-SMSC
LMC213AE-SMST

FlexPoint™ 100Fx/Tx

CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week; Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com**
E-mail: **info@blackbox.com**

Overview and Description

The FlexPoint™ 100Fx/Tx converts between Fast Ethernet 100Base-Fx fiber and 100Base-Tx twisted pair (RJ45 UTP) cabling. It operates in half-duplex (HD) or full-duplex (FD). The following multimode (MM) and single-mode (SM) models are described here:

Model	Fiber/ Connector	Distance (HD)	Distance (FD)
LMC213A-MMSC	MM/SC	412m/1,350ft.	2km/1.2mi.
LMC213A-MMST	MM/ST	412m/1,350ft.	2km/1.2mi.
LMC213A-SMSC	SM/SC	412m/1,350ft.	25km /15mi.
LMC213A-SMST	SM/ST	412m/1,350ft.	25km /15mi.
LMC213AE-MMSC	MM/SC	412m/1,350ft.	2km/1.2mi.
LMC213AE-MMST	MM/ST	412m/1,350ft.	2km/1.2mi.
LMC213AE-SMSC	SM/SC	412m/1,350ft.	25km /15mi.
LMC213AE-SMST	SM/ST	412m/1,350ft.	25km /15mi.
LMC214A-SCP	SM/SC	412m/1,350ft.	58km /35mi.
LMC214A-STP	SM/ST	412m/1,350ft.	58km /35mi.
LMC214AE-SCP	SM/SC	412m/1,350ft.	58km /35mi.
LMC214AE-STP	SM/ST	412m/1,350ft.	58km /35mi.

Installation and Configuration

Power Adapter Notice:

1. When used in a stand-alone configuration, this product is intended to be used only with a Listed Direct Plug-In Power Unit marked "Class 2" and rated at 9Vdc, 1 Amp.
2. This product should always be used only with its enclosed Power Unit.

WARNING!

Before plugging the Power Adapter to any wall outlet or AC power source, verify that the power on the unit is appropriate for your AC line voltage source.

Mounting and Cable Attachment:

The FlexPoint 100Fx/Tx can be individually wall-mounted using a wall-mounting kit, rack-mounted using a 5-position space-saver shelf, or inserted in a 14-position power-redundant FlexPoint Powered Chassis. When wall-mounting or shelf-mounting, attach the power adapter unit.

Attach the unit's RJ45 UTP via a category 5 cable to a 100Base-Tx Fast Ethernet device.

Attach the units's fiber via cable to a 100Base-Fx Fast Ethernet device. The FlexPoint transmit (Tx) must attach to the receive side on the other device; the receive (Rx) must attach to the transmit.

Switch Settings:

"RJ45 Cross-Over" Switch: When connecting the UTP to a hub or switch, set to "Straight-Through" (factory setting). When connecting to a workstation, set it to "Cross-Over."

"Auto-Negotiation/Manual" Switch: When in "Manual" (factory setting), the FlexPoint operation is selected by the "Full-Duplex/Half-Duplex" switch. When in "Auto-Negotiation", the FlexPoint automatically selects full or half duplex operation depending on the "Full-Duplex/Half-Duplex" switch position and the features of the device connected to its UTP cable.

"Full-Duplex/Half-Duplex" Switch: When the "Auto-Negotiation/Manual" switch is in "Manual" position, the "Full-Duplex/Half-Duplex" switch determines the type of duplex operation mode. When the "Auto-Negotiation/Manual" switch is in "Auto-Negotiation" position, the "Full-Duplex/Half-Duplex" switch advertises its setting to the device connected to the UTP port. When set to "Half-Duplex" (factory setting), the FlexPoint will operate in half duplex. When set to "Full-Duplex" the FlexPoint will operate in full-duplex or half-duplex depending on the features supported by the other device.

Half-duplex must be used when connecting to a hub. Full-duplex can be used when connecting switches or between a switch and a full-duplex workstation.

LED Indicators:

LED	Color	Description
Power On	Yellow	Power applied
Auto-Neg	Green	UTP switch is set to "Auto-Negotiation" position.
Full-Duplex	Green	Full-Duplex selected.
Half-Duplex	Green	Half-Duplex selected.
Fiber Lk/Rx	Green	Solid: Link Flashing: Data received.
Fiber Error	Red	Data errors detected on fiber.
UTP Lk/Rx	Green	Solid: Link,Flashing: Data received.
UTP Error	Red	Data errors detected on UTP.

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The World's Source for Cabling and Network Connectivity℠

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LMC214A-STP
LMC214AE-SCP
LMC214AE-STP

LMC213A-MMSC
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LMC213A-MMSC	MM/SC	412m/1,350ft.	2km/1.2mi.
LMC213A-MMST	MM/ST	412m/1,350ft.	2km/1.2mi.
LMC213A-SMSC	SM/SC	412m/1,350ft.	25km /15mi.
LMC213A-SMST	SM/ST	412m/1,350ft.	25km /15mi.
LMC213AE-MMSC	MM/SC	412m/1,350ft.	2km/1.2mi.
LMC213AE-MMST	MM/ST	412m/1,350ft.	2km/1.2mi.
LMC213AE-SMSC	SM/SC	412m/1,350ft.	25km /15mi.
LMC213AE-SMST	SM/ST	412m/1,350ft.	25km /15mi.
LMC214A-SCP	SM/SC	412m/1,350ft.	58km /35mi.
LMC214A-STP	SM/ST	412m/1,350ft.	58km /35mi.
LMC214AE-SCP	SM/SC	412m/1,350ft.	58km /35mi.
LMC214AE-STP	SM/ST	412m/1,350ft.	58km /35mi.

Installation and Configuration

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Attach the units's fiber via cable to a 100Base-Fx Fast Ethernet device. The FlexPoint transmit (Tx) must attach to the receive side on the other device; the receive (Rx) must attach to the transmit.

Switch Settings:

"RJ45 Cross-Over" Switch: When connecting the UTP to a hub or switch, set to "Straight-Through" (factory setting). When connecting to a workstation, set it to "Cross-Over."

"Auto-Negotiation/Manual" Switch: When in "Manual" (factory setting), the FlexPoint operation is selected by the "Full-Duplex/Half-Duplex" switch. When in "Auto-Negotiation", the FlexPoint automatically selects full or half duplex operation depending on the "Full-Duplex/Half-Duplex" switch position and the features of the device connected to its UTP cable.

"Full-Duplex/Half-Duplex" Switch: When the "Auto-Negotiation/Manual" switch is in "Manual" position, the "Full-Duplex/Half-Duplex" switch determines the type of duplex operation mode. When the "Auto-Negotiation/Manual" switch is in "Auto-Negotiation" position, the "Full-Duplex/Half-Duplex" switch advertises its setting to the device connected to the UTP port. When set to "Half-Duplex" (factory setting), the FlexPoint will operate in half duplex. When set to "Full-Duplex" the FlexPoint will operate in full-duplex or half-duplex depending on the features supported by the other device.

Half-duplex must be used when connecting to a hub. Full-duplex can be used when connecting switches or between a switch and a full-duplex workstation.

LED Indicators:

LED	Color	Description
Power On	Yellow	Power applied
Auto-Neg	Green	UTP switch is set to "Auto-Negotiation" position.
Full-Duplex	Green	Full-Duplex selected.
Half-Duplex	Green	Half-Duplex selected.
Fiber Lk/Rx	Green	Solid: Link Flashing: Data received.
Fiber Error	Red	Data errors detected on fiber.
UTP Lk/Rx	Green	Solid: Link,Flashing: Data received.
UTP Error	Red	Data errors detected on UTP.

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Specification

- **Protocol:** IEEE 802.3, 100Base-Fx, 100Base-Tx
- **Connectors and Cables:**
  - **Fiber:** (1) SC or (1) ST
    - **Multi-mode:** 50/125, 62.5/125, 100/140 µm
    - **Single-mode:** 9/125 µm
  - **Twisted Pair UTP:** (1) RJ45, pins 1-2, 3-6, Category 5 (EIA/TIA 568)
- **Supported Distances:**

	Half-Duplex	Full-Duplex
Twisted Pair UTP:	100m./328ft.	100m./328ft.
Multi-mode:	412m/1,350ft.	2Km/1.2mi.
Single-mode:		
LMC213A-SMSC	412m/1,350ft.	25Km/15mi.
LMC213A-SMST	412m/1,350ft.	25Km/15mi.
LMC213AE-SMSC	412m/1,350ft.	25Km/15mi.
LMC213AE-SMST	412m/1,350ft.	25Km/15mi.
LMC214A-SCP	412m/1,350ft.	58Km/35mi.
LMC214A-STP	412m/1,350ft.	58Km/35mi.
LMC214AE-SCP	412m/1,350ft.	58Km/35mi.
LMC214AE-STP	412m/1,350ft.	58Km/35mi.

- **Dimensions / Weight:** W:3.0"xD:4.0"xH:1.0" / 2 lb.
- **Power:** 9 VDC / 500 mA
- **Temperature:** 0 to 40 degrees C
- **Humidity:** 0-90% (non-condensing)

TRADEMARKS

All applied-for and registered trademarks are the property of their respective owners.

FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numéirques de las classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

NORMAS OFICIALES MEXICANAS (NOM)

ELECTRICAL SAFETY STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedelstales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra or superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u ostros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precación debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    A: El cable de poder o el contacto ha sido dañado; u
    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    C: El aparato ha sido expuesto a la lluvia; o
    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    E: El aparto ha sido tirado o su cubierta ha sido dañada.

040-01005-001 03/02

Specification

- **Protocol:** IEEE 802.3, 100Base-Fx, 100Base-Tx
- **Connectors and Cables:**
  - **Fiber:** (1) SC or (1) ST
    - **Multi-mode:** 50/125, 62.5/125, 100/140 µm
    - **Single-mode:** 9/125 µm
  - **Twisted Pair UTP:** (1) RJ45, pins 1-2, 3-6, Category 5 (EIA/TIA 568)
- **Supported Distances:**

	Half-Duplex	Full-Duplex
Twisted Pair UTP:	100m./328ft.	100m./328ft.
Multi-mode:	412m/1,350ft.	2Km/1.2mi.
Single-mode:		
LMC213A-SMSC	412m/1,350ft.	25Km/15mi.
LMC213A-SMST	412m/1,350ft.	25Km/15mi.
LMC213AE-SMSC	412m/1,350ft.	25Km/15mi.
LMC213AE-SMST	412m/1,350ft.	25Km/15mi.
LMC214A-SCP	412m/1,350ft.	58Km/35mi.
LMC214A-STP	412m/1,350ft.	58Km/35mi.
LMC214AE-SCP	412m/1,350ft.	58Km/35mi.
LMC214AE-STP	412m/1,350ft.	58Km/35mi.

- **Dimensions / Weight:** W:3.0"xD:4.0"xH:1.0" / 2 lb.
- **Power:** 9 VDC / 500 mA
- **Temperature:** 0 to 40 degrees C
- **Humidity:** 0-90% (non-condensing)

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This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numéirques de las classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

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12. Precación debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
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